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The limits of integrated water resources management: a case study of Brazils Paraba do Sul River Basin

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The Limits of Integrated Water Resources Management: A Case Study of Brazil's Paraíba do Sul River Basin

Antonio A. R. Ioris

Abstract: The transition to water sustainability involves challenging questions about the assessment of problems, the involvement of stakeholders and the coordination of responses. In order to overcome those difficulties, new approaches have been developed to inform regulatory changes and help to improve the level of water sustainability. One of the preferred methods is the concept of integrated water resources management (IWRM), which combines different aspects and a plurality of goals associated with water use and conservation. However, there are still important obstacles in the way of IWRM and, ultimately, water sustainability. A case study in the Paraíba do Sul River Basin, in the southeast of Brazil, illustrates the multiple barriers to attain the appropriate integration of socioeconomic considerations into the sustainable management of water systems. The opportunity to restore the environmental condition and engage local stakeholders has been largely frustrated by the contradictory directions of the regulatory reforms. On the one hand, IWRM-informed policies have introduced flexible instruments of water regulation and pushed for the reorganisation of the river basin committee. On the other hand, the focus has been restricted to technical and managerial solutions, which tend to ignore the influence of social inequalities and political asymmetries and, as consequence, undermine the achievement of water sustainability.

Key words: water sustainability, water reforms, IWRM, water charges, Paraíba do Sul.

Introduction

Since the major conferences and publications on environmental sustainability in the 1970s and 1980s, there has been a significant improvement in the understanding of water management questions. Both the assessment of water problems and the formulation of solutions have benefited from a better comprehension of the social and natural complexity of water use and conservation. The meaning of sustainable water management has itself changed from simply meeting quantitative water demands to

concerns about water quality and, more recently, to the integration of spatial and temporal scales of multidimensional water issues (Hermanowicz, in press). However, the translation of sustainability principles into action has often been a difficult and contentious process. Reforming water management under the goals of environmental sustainability is a far from complete project, particularly because of the difficulties to break the link between economic growth and water demand (Gleick, 2002) or the reluctance to incorporate issues of fairness and community involvement into the decision-making process (Syme and Nancarrow, 2006). The purpose of this paper is to discuss the extent that new attempts to regulate and manage water resources in Brazil have been able to respond to pressing demands for environmental sustainability.

In many parts of the world, the introduction of a new structure of water regulation has reflected the influence of international concepts and methodologies. One of the leading principles is *integrated water resources management* (IWRM), defined as “a process which promotes the co-ordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (Global Water Partnership, 2003). It is important to recognise the close association between the concept of sustainable development and the goals of integrated water management. As observed by Simonovic (1996), the sustainability agenda has reinvigorated attempts to better manage the water environment through appropriate policy-making and integrated planning strategies. Some accounts describe the positive outcomes of IWRM-inspired experiences, such as those planned for the Fraser River in British Columbia, the Don River in Toronto and the Thames River in England (Mitchell, 2005). Other assessments, particularly in developing countries, are more sceptical about the appropriateness of IWRM to deal with the long legacy of

social and economic demands and lasting environmental degradation (e.g. Swatuk, 2005).

This international debate has important repercussions for the Brazilian experience, where “the institutionalization of water norms has most strongly reflected the IWRM framework” (Conca, 2006: 309). Policy tools informed by IWRM have been incorporated into national water regulation, such as catchment plans, water licences and bulk water charges, which form the basis of the 1997 Water Act (Law 9433/1997). The same Act also established a national water management system that extends from the federal government to state authorities and river basin committees (Abers, 2007). Although the institutional reforms have been extolled by some authors as a genuine new paradigm for dealing with water issues in Brazil (cf. Formiga-Johnsson et al. 2007), not sufficient attention has been given to operational problems or political disputes on the ground. A case study in the Paraíba do Sul River Basin will show that, despite repeated claims of success by the government and local water managers, the new regulatory approaches tend to underestimate social inequalities and power asymmetries. Most of the public debate and stakeholder involvement in the studied area have been tied up to a single issue, the introduction of bulk water charges, which has paradoxically magnified the already contested basis of water use. Before moving to the case study, it is first necessary to consider some problems firmly entrenched in the IWRM model.

The Context and the Internal Contradictions of IWRM

There is a rising concern nowadays with the need to better manage water resources and develop appropriate solutions to problems such as water scarcity, urban flooding and river pollution. The origins of the contemporary agenda of water management can be traced back to the attempts to connect river engineering to

regional development by the Tennessee Valley Authority in the 1930s. The idea that water could facilitate economic development later influenced the construction of dams and the expansion of water infrastructure in the following decades. Before too long, it became evident that focusing solely on the economic dimension of water projects was leading to operational inefficiencies and widespread impacts. Concepts and techniques started to be revisited in the end of the 1970s and passed to call for a more comprehensive understanding of the social and environmental dimension of water systems. The new comprehension of water problems has, particularly since the 1990s, exerted formidable influence on legal, technological and administrative reforms around the world (Tvedt and Cooper, 2006), with a gradual movement away from conventional interventions and towards a combination of regulatory, economic and multi-stakeholder participation measures (Ballabh, 2008).

This reform of water management policies has been closely related to the construction of a broader agenda of sustainable development. The search for water sustainability requires a flexible management of the water cycle and innovative forms of stakeholder contribution (Cui et al., 2007). Nonetheless, the association between sustainable development and water management is far from straightforward. While some authors still define water sustainability as basically the search for an efficient use of water (Wilderer, 2007), there is growing attention given to the multiplicity of perceptions of the role of water management (Hermanowicz, in press), the need to deal with environmental conservation together with social and economic demands (Ioris et al., 2008) and the fact that water sustainability entails a scientific mindset that recognises the relevance of place and integration (Schmandt, 2006). In that sense, a key concept of the contemporary agenda of water sustainability is the aforementioned IWRM, a body of knowledge that has informed the development of new legislation, the involvement of stakeholders and the redesign of management approaches (Conca,

2006). The basic rationale of IWRM is to foster an integration of socioeconomic development with physical planning and environmental protection (Savenije and Van der Zaag, 2008).

The ongoing efforts to integrate public policies have undoubtedly represented an evolution in relation to the previously fragmented and technocratic approaches. However, the translation of IWRM objectives into concrete management strategies has not been without its problems and dilemmas. As it will be discussed below for the Paraíba do Sul, the reorganisation of water regulation inspired by the IWRM doctrine has faced unexpected difficulties and delays in recent years. To a large extent, those obstacles can be related to a number of intrinsic limitations of the IWRM proposition. To begin with, despite various efforts to conceptualise integrated management, its epistemological grounds continue unclear and uncertain. Most IWRM scholars persistently insist on the necessity to integrate plans and procedures (e.g. Bongartz, 2003; Faby et al., 2005; Hendry, 2006), but it is not easy to grasp what exactly should be prioritised and how things should be integrated (Biswas, 2008). Water management is essentially about choosing between equally important demands, but elusive claims for wide-ranging integration, as in the case of IWRM, are unable to offer much help when dealing with specific water management circumstances.

The practical experience in many countries (as in Colombia, according to Blanco, 2008) demonstrates the difficulty to produce innovative answers to overly complex water problems with only a vague set of ideas. In spite of calls for integration, some IWRM initiatives have suffered from the same old problems of administrative division and lack of joint thinking (Fischhendler, 2008). On these operational weaknesses of the new concept, Rahaman and Varis (2005) point out that the implementation of IWM in the field continues to be very challenging, among other things, because “the water sector is sparse in integrating its integrated plans”.

It is crucial to recognize that the conceptual and operational limits of IWRM are deeply related to the political naivety that characterises most of the ongoing institutional water reforms. That is because many authors still fail to acknowledge that power differences between social groups or spatial areas have a striking influence on water allocation and on the distribution of negative environmental impacts. It has been observed elsewhere that a critical limitation of IWRM is the entrenched attitude of water managers and hydrologists, who consider socioeconomic and political demands as a deviation from the ‘purist’ goals of water management (McCulloch and Ioris, 2007). For those professionals, the obstacles to implement IWRM should be attributed to circumstantial nuisances to be overcome or avoided, but certainly not to more fundamental political disputes (Blomquist, and Schlager, 2005). As a result, IWRM advocates fall short of addressing the important political nexus between economic growth, environmental degradation and social demands. It needs to be remembered that social and economic inequalities are integral features in a politicised environment, such as in Brazil, where conflicts over resources are still linked to systems of political and economic control (Bryant, 1998). It means that, if the political bases of water management are ignored, any new attempt may end up legitimating existing inequalities and social privileges (Zhouiri and Oliveira, 2005).

The case study below will demonstrate that the internal limitations of IWRM (namely its conceptual impression, its limited operationalization and the denial of water politics by those in charge) have significantly prevented the achievement of satisfactory responses to the environmental and social problems related to water management in that river basin.

The Case Study in the Paraíba do Sul River Basin

Fieldwork methodology and interpretation approach

The case study involved a fieldwork data collection in the river basin between March and May 2007, with a preliminary visit to the area carried out in 2006. The bulk of the study comprised 18 confidential interviews, followed-up by e-mail discussion, water stakeholders (including industrialists, sanitation companies, NGOs and professional bodies) and government officials (from municipal, state and federal agencies). Interviews were recorded, transcribed and only the most relevant parts were translated (by the author) into English. The research also included the content analysis of documents, meeting minutes, plans and the attendance to open meetings of the river basin committee. In addition, environmental monitoring and hydrological data were analysed using statistical computer packaged to identify changes in long-term trends. The examination of the collected data followed the recommendation of Sayer (1992) that the world is not merely differentiated but also stratified. Consequently, the interpretation of data needs to concentrate on the dynamic relations between events, structures and mechanisms. Following a critical analysis of the complex reality, explanation can emerge from the dialectical movement from the abstract (the isolation of particular attributes and relationships from the whole) and the concrete (the multiplicity of structures and events that comprise the world). Explanation was also tied to understanding the meanings, perceptions and motives of local stakeholders, as well as to the antecedents of actions and the meaning of current actions for those involved (cf. Cloke et al., 2004).

The river basin

The Paraíba do Sul River Basin (henceforth PSRB) is located in the Southeast of Brazil and is one of the country's most dynamic economic areas.¹ Water

¹ The river basin includes 55,500 km² between latitudes 20°26' and 23°00'. The average flow at the river mouth is 1,118.40 m³/s, with low flow (Q₉₅) of 353.77 m³/s. The river extension is

availability and the river network have been historically important for regional development and urban growth. Because of its strategic location (between the states of São Paulo, Minas Gerais and Rio de Janeiro), the river basin is today responsible for around 11% of the national GDP, but it has been a key economic region for more than 300 years. Already in the 18th Century, the Paraíba do Sul was the main communication route between the coast (Rio de Janeiro) and inland gold mines. With the introduction of coffee production in 1770, vast areas of land were cleared and the natural vegetation removed to open space for plantation farms. By the end of the 19th Century, because of the significant rates of soil erosion and land degradation, coffee started to migrate to other parts of Brazil. Nonetheless, a new and stronger economic phase commenced around 1900s with the introduction of textile and food industries (Müller, 1969). The most significant milestone was the foundation of the National Steel Company (CSN) in 1941, the first major steel plant in the country. The river basin has now a diversified industrial sector, which includes more than 8,000 manufacturing units. Together with fast industrialisation, more than 120 hydropower stations were installed in the river basin, with some new projects under construction.

Unfortunately, urbanization and industrial production have led to significant pollution problems due to sewage effluent (1,000 megalitre/day) and toxic industrial waste (7 ton/day).² According to the official environmental monitoring service, the more polluted river stretches have rates of coliform bacteria between 50 and 160 times the legal threshold; water pollution is aggravated by the fact that only 17.6% of the sewage receives some form of treatment. The main public health consequence of

around 1,100 km, draining areas of 180 municipalities. More than 5.4 million people live in the river basin. The Paraíba do Sul is also used as the main source of water for the Rio de Janeiro Metropolitan Area, which means that more than 12 million people rely on the river for their water supply (Coppetec, 2006).

² It is beyond the objectives the paper to list the full range of environmental problems in the Paraíba do Sul and the few examples provided in this section were obtained in Coppetec (2002 and 2006). More information at www.ceivap.gov.br

the lack of sewage treatment is the high rates of hospital treatments related to infectious and parasitic diseases, which affect mostly the low-income population. Treacherous biological conditions are particularly evident in the middle section of the main river where most of industry and hydroelectricity are located (Araújo et al. 2003). There are clear evidences of riverbed and reservoir contamination by heavy metals, such as chromium, released by industrial plants (Gruben et al., 2002). The total rate of water demand amounts to 263 m³/s, which represents significant pressures on limited water resources (more than 74% of the low flows - see reference to Q₉₅ above). The extraction of sand for civil engineering increased 193% between 1993 and 2003, primarily in the upper river basin, responding for a rate of evaporation equivalent to the water demand of 326,000 inhabitants (Dos Reis et al., 2006). Additional water management problems are related to the persistent urban flooding, soil erosion, lack of adequate waste treatment and the construction of new hydropower dams. For the purpose of this discussion, it is critical to realise that this precarious environmental situation has not improved in recent years.

The limits of IWRM: when theory clashes with practice

During most of the 20th Century water management in the PSRB meant basically the expansion of water supply and hydropower generation. The decision on where and how to invest was highly technocratic and centralised in the hands of the national government. While water supply and hydropower infrastructure was the object of substantial public funds, there was minimal investment in effluent treatment and environmental restoration. In just a few decades, the quality of the environment in the main river and in many of its tributaries was seriously compromised. The formal response to mounting water problems started in 1968, when the Paraíba do Sul Valley Commission (COVAP) was established by the military dictatorship. The commission

was practically ineffective and was replaced in 1979 by a multiministerial committee (CEEIVAP), also with negligible results. The membership in both organisations was restricted to public agencies and civil servants, without any mandate from water users and other stakeholders. The PSRB became notorious as an area with serious water quality and quantity problems. It was only in the 1990s, when the level of pollution started to attract growing international criticism, that a more responsive structure was eventually established. The new river basin committee (CEIVAP) was organised in 1996 under the IWRM principles of catchment integration and stakeholder involvement. The PSRB was quickly turned into a showcase for the national government, which financially supported CEIVAP to organise the headquarter bureaucracy and to prepare studies and plans (Braga et al., 2005).

Despite the laudatory comments about the CEIVAP in the media and academic circles (here taken for granted, due to lack of editorial space), it is crucial to observe that, after more than 10 years of activity, the new committee has largely failed to reduce environmental pressures and revert water degradation. Several CEIVAP members contacted during our research expressed their concern, or even perplexity, with the tinny environmental results achieved so far. Others complained about the restricted contribution of the new committee in terms of strategic thinking and long-term planning. Notwithstanding governmental support and an extensive bureaucratic structure, the fundamental problems of environmental degradation and fragmented management remain virtually the same in Paraíba do Sul since CEIVAP was formed. It is true that most committee members believe that the current troubles are transitory and, in the long run, the committee would justify its existence. According to these voices, the complexity of the river basin was underestimated when CEIVAP was formed, in particular the difficulty to integrate federal and (in the main

river and in some major tributaries) state regulation (in most tributaries).³ It is true that the dual domain – federal and state responsibilities for the same river basin – has been one of the major integration challenges for the management of larger catchments in Brazil. There exist today five sub-basin committees and eight municipal consortia in the PSRB (the former have a legal mandate similar to the river basin committee, while the latter have more targeted objectives, such as waste and sanitation), which are not necessarily communicating to each other or with the overall river basin committee (i.e. CEIVAP). The result is that, instead of a more integrated structure, the regulatory reforms paradoxically created an institutional fragmentation and (quite often) a fratricide competition for resources.

These positive expectations about the future of the new committee were certainly important and our research took that carefully into consideration, but at the same time these opinions seemed overly influenced by the hegemonic discourse of IWRM. It is crucial to mention that the stakeholders who expressed a more optimistic view about the ongoing experience tend to be exactly those that, since the beginning of the reform process, endorsed the need to follow the IWRM principles. In other words, these stakeholders seem to have a circular argument, which is biased towards the new institutional framework, despite to the negative outcomes on the ground, namely the persist trend of environmental degradation in many parts of the river basin. Although the internal fragmentation of efforts – which arises from the unique federal configuration of Brazilian river basins – certainly has a major impact on the success of water management initiatives, as pointed out by those supporting the current model, the failures of the institutional reforms appear to indicate the existence of some more fundamental inadequacies in the IWRM-inspired regulation.

³ According to the Brazilian Constitution, water has dual ownership: federal, for those rivers that cross more than one state or are shared with other countries, and state responsibility, for those confined to one state territory.

In fact, the PSRB experience seems to clearly encapsulate the conceptual, operational and political limitations of IWRM mentioned above. First of all, the new regulatory approaches have been presented to the general public as a significant step forward, but without any clear indication on how long-lasting problems would be effectively resolved (i.e. the plans and strategies so far produced remain very generic and have had limited implementation). Likewise, there have been only limited opportunities for the public to participate in the decision-making process: despite a discourse of democratic governance, the new river basin committee has, for the most part, replicated the centralised, top-down mechanisms of water management (e.g. civil servants and academics have played a crucial role in the organisation of the new river basin committee, cf. Formiga-Johnsson et al., 2007). Abers and Keck (2006) point out that the regulatory reforms require a multi-directional power transfer among a variety of policy arenas and actors, but that remains a fundamental challenge to the river basin committee. It should be mention here that the shortcomings of its internal democracy led the committee to a period without regular meetings in the year 2007, which only ended due to renewed calls to reconvene and, more importantly, pressures from government agencies. The consequence is that, despite all the effort, the committee has been largely powerless and often inactive in the face of old and new water problems.

The main distortion: the narrow agenda of water pricing

In order to understand the mismatch between theory and practice of IWRM, it is important to study how the river basin committee has functioned in recent years. It is clear that CEIVAP has had a busy agenda of meetings and ceremonies, many times involving ministers and senior authorities. Nonetheless, most of these activities have

been focused on a single issue: the implementation of water use charges (i.e. bulk water charges or water pricing), which is one of the fundamental tenets of the IWRM-inspired regulation (to the extent that it serves to express the economic value of water). The case for water charges became stronger around the year 2000 when many committee members started to argue on the necessity to reduce the financial dependency from central government grants. Between 2000 and 2002, opinions against and in favour of charges split the committee into two polarised views. In favour of bulk water charges were the federal government, academics and some NGOs. Against the charges was basically the representation of agriculture, electricity generation, sanitation companies and especially the industrial sector.

During that period, according to our interviewees, CEIVAP meetings were turned into a ‘battleground’ where the representatives of the critical sectors systematically questioned the rationale of the proposed charges. The fierce debate about the adoption of charges, instead of improving the quality of stakeholder engagement, was even emasculating the initial enthusiasm about the new committee. Interestingly, in 2002, the controversy took a curious turn when the industrialists surprisingly changed their position and agreed with the proposed charges; the river basin committee eventually approved the charging scheme and the implementation started in 2003.⁴ It appeared that the industrialists listened to the arguments and altered their opinion democratically. However, the real reason is rather more mundane: since the charges were effectively inevitable – due to the requirements of the 1997 legislation – the industry preferred to take a pre-emptive action in order to

⁴ All water uses above a certain threshold (i.e. consumptive use above 1 litre/second and hydropower bigger than 1 MW) must pay a monthly charge, calculated taking into account the extraction rate, the percentage of use and the quality of the effluent. The standard charge (R\$ 0.02/m³) is applied to industries, water supply and mining, and there are discounts for agriculture and aquaculture. There is a charge of 0.75% on hydroelectric revenues, but the river basin committee has limited say in how this specific levy is spent. Note: US\$ 1.00 corresponds to approximately R\$ 2.00.

secure reduced fees and, more importantly, prevent the adoption of a more stringent regulation. The general public was led to believe that the industrial sector was cooperating with the new water management approaches, whereas it was in fact a tacit acceptance of the charges. The irony during those crucial committee meetings was the unexpected support that the industry received from the environmental NGOs, which declined to impose higher charges alleging that that it was better to settle the matter at once.

Charging bulk water has been a central policy of the new water regulation in the PSRB. On paper, it was claimed that the charges, as an economic instrument applied to environmental management, would be able to mitigate the environmental passive, induce rational use of water and reallocate water according to economic efficiency (Garrido, 2004). In practice, however, it achieved little more than modest investments in isolated sewage works and riverbank regeneration projects. Since the beginning, the controversy about charges has prevented the river committee to consider the broader context of environmental problems and social issues related to water (at the time of our fieldwork in 2007, the debate in the river basin was concentrated on the revision of the charging scheme). In effect, between 2003 and 2006, the charging scheme was responsible for collecting a total of R\$ 25.4 million, which is considerably less than the estimated need to restore the river basin: R\$ 360 million per year in capital investments or R\$ 4,600 million by 2025 (Coppetec, 2006). In 2006, a total sum of R\$ 7.1 million was spent in fourteen municipalities (out of 180 in the river basin), but the money went to short-lived projects with only marginal environmental consequences.

Because the grants from the committee come in the form of donations, competition for resources is fierce among the various municipalities and even NGOs. There is plenty of lobbying during the selection of proposals (for instance, it is

common to notice mayors that attend CEIVAP meetings together with engineers of construction companies that have a vested interest in accessing committee funds), which only helps to poison the dialogue between CEIVAP members. Moura (2006) describes how the income from the water charges has been unevenly invested in the river basin by the committee, a situation that constantly feeds spatial conflicts and disputes between municipalities. A related problem is that the acceptability of the charging scheme has not improved (data provided by CEIVAP show that the income remained fairly constant between 2003 and 2007: around R\$ 550,000 per month) and, after more than five years, there is still considerable suspicion and misinformation among water users. For example, more than 50% of water users supposed to pay for water use in 2004 refused or delayed their payment (Soares, 2005).

Notwithstanding all the above problems, the main failure of the PSRB charging mechanism is probably related to its economic efficiency: until now water charges have neither influenced the reallocation of water in the river basin, nor curbed the expansion of water use. To some extent the new regulatory framework has induced some industries to anticipate investments in effluent treatment, but that only happened in the companies that were already planning to acquire new equipment or technology. In a survey with 488 industries, Féres et al. (2005) found that most companies decided to invest in pollution reduction mainly because of the risk of bad publicity vis-à-vis their corporate responsibilities. That is consistent with other international studies, which observed that the active engagement of the stakeholders, instead of charges, is the most important factor for achieving water efficiency and sustainable water use.

Finally, the new regulatory framework has been paradoxically used to legitimise the degrading activities of industrial and agribusiness companies, as long as the charges provide a political excuse for not questioning their location, scale and

operation. In our interviews, as well as during the CEIVAP meetings, the representatives of the industrial sector were those more explicitly claiming that they have already done their contribution to restoring the river, especially in the form of water charges. In practice, it means using the activities of the river basin committee and the formal compliance with the new policy instruments as an excuse to avoid further financial contribution to river restoration and, more importantly, to evade themselves from the history of river degradation. That happens because the new regulation treats all water users according to their payment capacity, which erodes the differences between stakeholder groups and, consequently, hides the different responsibilities for the environmental degradation of the river basin. For all these reasons, the claim that water pricing is a success in the PSRB on grounds of inclusiveness and technical efficiency (cf. Formiga-Johnsson et al., 2007) seems to be largely overstated. On the contrary, the opportunity to effectively improve water management has been wasted under ideological pressures for the adoption of water charges and related IWRM-based policies.

Conclusions: An Incomplete Agenda of Water Sustainability

The present analysis is only a very simplified account of a complex web of interaction and conflicts in the PSRB, but it should serve as an illustration of the difficulties to translate IWRM goals into practice and, ultimately, achieve water sustainability. Environmental degradation and political asymmetries evidently existed before the current institutional reforms, but the intrinsic limitations of IWRM – namely its conceptual, operational and political shortcomings – have led to the persistence of water management problems. The recent attempts to improve the water regulation in the PSRB, which represent just the most recent chapter in a long history

of water use and management, have been largely unable to recover the environmental condition of the river basin. Notwithstanding rhetorical changes, the new regulatory approaches – in particular the new river basin committee, organised under the influence of IWRM – have reproduced past contradictions and limitations of water management. The consequence is that, after more than 300 years of intense agricultural, urban and industrial activity, the river basin remains without any clear indication of how or when the environmental condition will be effectively restored.

The new regulatory framework, which should be creating synergisms between state and society, has paradoxically widened the gap between public agencies and society at large, given that the activities of the river basin committee have been dominated and manipulated by the stronger political players, namely the federal government and business sectors, which have developed a sort of ‘veto power’ in the CEIVAP activities. This river basin committee remains a sort of semi-governmental entity (as warned by Gruben et al., 2002) rather than a genuinely democratic decision-making arena where all stakeholders have equal opportunity to influence the decision process. Instead of integrating ecological and social goals, as proposed by the IWRM theory, efforts in the PSRB are as fragmented as ever vis-à-vis and more than a dozen river basin organisations are in daily competition with the overall committee (CEIVAP) for financial resources and political space. The fundamental cause of those problems is that most of the regulatory effort has been concentrated on the introduction of water charges, which confirms the observation of Brannstrom (2004) that the ultimate goal of the regulatory reform in Brazil is really the implementation of water pricing.

The ambiguities of the PSRB experience demonstrate that IMWR-inspired answers not necessarily lead to adequate social and environmental solutions to highly complex and politicised water problems. On the contrary, the new policies introduced

an economic rationality – the ‘user-pays principle’ – that is blind to the uneven balance of power and to the historical context of environmental degradation. In the case of the PSRB, the ongoing IWRM-inspired reforms have been unable to properly address the responsibilities for water problems and have failed to indicate a genuinely new direction for dealing with social demands and environmental conservation. That is the reason why Merrey et al. (2005) recommend that, instead of its currently weak version, IWRM experiences should put emphasis on empowering of poor people, reducing poverty, improving livelihoods and promoting fair economic growth. In the same way, Swatuk (2005) suggests that it is important to reflect on the political nature of the IWRM proposition and be prepared to revise, or even discard, the basic assumptions and ideologies driving the reform process. Overall, the search for water sustainability requires, first and foremost, taking into account the full range of social and political pressures that shape the use and conservation of water systems.

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